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June 12, 2003

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: RM-10403
*Progeny LMS, LLC Petition for Rulemaking to Amend Part 90 of the
Commission's Rules Governing Location and Monitoring Service To Provide
Greater Flexibility*
Written Ex Parte Comments of SchlumbergerSema Inc.

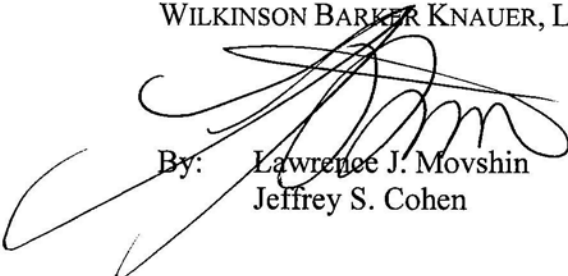
Dear Ms. Dortch:

On behalf of SchlumbergerSema Inc. ("SSI"), we submit the enclosed *ex parte* comments on the "White Paper" submitted October 10, 2002 by Progeny LMS, LLC ("Progeny") in the above-referenced proceeding. In accordance with Sections 1.1206(b) and 1.49(f), we are providing notification of this *ex parte* presentation electronically.

Please contact the undersigned should you have any questions.

Sincerely,

WILKINSON BARKER KNAUER, LLP

By:  Lawrence J. Movshin
Jeffrey S. Cohen

Enclosure

June 12, 2003

Alan J. Scrimme
Chief, Policy and Rules Division
Office of Engineering and Technology
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: RM-10403
*Progeny LMS, LLC Petition for Rulemaking to Amend Part 90 of the
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Written Ex Parte Comments of SchlumbergerSema Inc.

Dear Mr. Scrimme:

At our meeting last month, you asked for more detail concerning the impact that the proposals set forth in the petition for rulemaking submitted by Progeny LMS, LLC ("Progeny"), and as addressed in Progeny's October 10, 2002 White Paper, would have on the Part 15 operations of SchlumbergerSema Inc. ("SSI"). On behalf of SSI, we provide more detail below. In accordance with Sections 1.1206(b) and 1.49(f), we simultaneously provide notification of this *ex parte* presentation electronically.

Introduction

Although Progeny claims in its White Paper that "additional flexibility for LMS systems will not cause an unacceptable level of interference to Part 15 devices,"¹ Progeny's proposed rule changes would, in fact, likely reduce sharing in the band, by creating destructive interference to Part 15 spread spectrum devices. Progeny's assertion that its system, which is at least ten times more powerful than Part 15 spread spectrum devices, would "not present an interference risk to Part 15 devices that is greater than the inherent interference risk already present from other Part 15 devices"² cannot be supported by the facts, and is wrong as a technical matter.

¹ White Paper at Section 1, p. 1.

² *Id.*

Despite the massive quantity of Part 15 devices operating in the 902-928 MHz band, interference is very rarely problematic. This is because Part 15 devices are designed to avoid or limit interference, and the present LMS rules were crafted to ensure the continued viability of Part 15 devices operating in the 902-928 MHz band. However, Progeny's requests for increased bandwidth and service and technical flexibility would translate into substantially different LMS operations, leading to considerable and potentially devastating interference created by LMS licensees to Part 15 users.

Using highly optimistic, "best case" scenarios, Progeny's White Paper suggests that little or no interference will be created as a result of its proposed changes; these assertions are at best incomplete and, at worst, misleading and inaccurate. The discussion below sets out a more realistic analysis of the potential for interference to and from Part 15 devices if Progeny's suggestions are adopted.

Technical Discussion

Progeny's White Paper about interference presents a limited amount of data; using these limited scenarios, the analysis is generally accurate. However, the scenarios presented are neither typical ones, nor are they the most critical to the applications of the various Part 15 users. Other commenters, such as Itron and Waverider, have already elaborated on the potentially destructive effects of Progeny's proposal on their own applications.³ The following analysis focuses on the likely impact of Progeny's proposals on SSI's automated meter reading ("AMR") system.

SSI's AMR system uses a combination of Part 101 Multiple Address System ("MAS") licenses and spread spectrum Part 15 devices to create a low-cost, private internal, telemetry services network which allows it to transmit and receive data for the remote monitoring and control of devices, primarily utility meters. SSI, as did its predecessor, CellNet Data Systems, Inc., utilizes the 902-928 MHz band for its unlicensed local area network connecting the endpoint (meter) devices to the MAS network. The endpoints transmit data via the unlicensed 902-928 MHz band to MicroCell Controllers (MCCs), which are pole-mounted devices typically placed 20-30 feet above ground level ("AGL"). Although the endpoints are transmit-only devices that probably would not be impacted by the presence of an LMS network, the MCCs both receive data from the Part 15 endpoint devices and transmit data to the wide area, licensed, narrowband MAS network. It is the Part 15 receiver of the MCC portion of SSI's AMR system, therefore, that would be most vulnerable to interference created by an LMS network with the modifications proposed by Progeny.

³ See Comments of Itron, Inc. on Progeny White Paper (dated Jan. 10, 2003); *ex parte* letter of WaveRider Communications, Inc. (dated Mar. 7, 2003).

The impact on SSI's AMR system is analogous to that posed for the Ricochet service discussed in the White Paper.⁴ Progeny's interference scenario of the potential effect of an LMS network (incorporating Progeny's proposals) on a system such as Ricochet's is unrealistically optimistic. In the scenario devised by Progeny, there was no line-of-sight from the pole-top device (which is analogous to SSI's MCC) to the LMS base station, but there was a clear line-of-sight from the LMS pole-top device to a hypothetical Part 15 interferer. Even in this most favorable situation, the amount of interference created to the Ricochet pole-top device was above acceptable levels.

In the most likely scenario, the LMS transceiver will have direct line-of-sight to tens or hundreds of SSI's MCCs. SSI's AMR deployments are cellular in nature with typical distance between MCCs of 0.3 to 0.5 miles, with coverage of 0.07 to 0.2 square miles per MCC, and consisting of 5 to 15 MCCs per square mile. The LMS system in a suburban environment (*see* section 2.5 of the White Paper) with a radius of 2.2 miles will have a coverage area of 13 square miles. Within this area, there will be 65 to 190 MCCs; most of these MCCs will be affected by the LMS transmissions, because the received power at the MCC location on poles at 20-30 feet AGL will be stronger compared to the power received by the LMS mobile receiver located at 6 feet AGL (*see* section 2.4 of the White Paper). In addition to the increased exposure created by the height above ground of the MCC, the MCC receiver is much more sensitive (-114 dBm, typical) than the LMS transceiver (-108 dBm, *see* section 2.4 of the White Paper), which makes the effects of interference even worse. Indeed, it is this sensitivity that allows the MCC to receive the low-power signals from the lower powered SSI spread spectrum transmitters. The situation is even more critical in the urban environment, where, because of the density of LMS stations (up to 5 per square mile, *see* section 2.5 of the White Paper), it is almost certain that every MCC will have several LMS transmitters, and thus potential interferers, within actual line of sight.

Progeny's proposal to allow voice and other services in the LMS band creates additional potential for interference, as it is almost certain to translate into a much higher RF duty cycle from LMS networks than was reasonably anticipated for systems operating under the current regulations. In Progeny's White Paper, there is no reference to the impact of the RF duty cycle in Progeny's various "interference scenarios." Rather, the LMS network is described as a "packet data network" with ancillary voice service.⁵ However, Progeny's Petition for Rulemaking makes clear that the flexibility requested is needed so that LMS licensees can compete with other CMRS carriers who are also providing location-based services;⁶ Progeny makes no pretense about its intent to expand its service offerings to include a voice capability, and so interference must be calculated with this voice product in mind.

⁴ White Paper at Section 3.2.2, p. 12.

⁵ *Id.* at Section 2.1, p. 2 ("Ancillary voice service . . . may be an important component of LMS service offerings.")

⁶ *See* Progeny Petition for Rulemaking at p. 6.

An LMS voice service could generate duty cycles capable of undermining the use of this band for Part 15 applications. It is well known that when two, independent systems have access to the same communication channel, there is the opportunity for collisions. As the collision rate increases, the system's throughput decreases thus creating data errors in reception on either or both systems. The collision rate is strongly dependent on two parameters: the strength of the colliding signals (the more powerful overcomes the less powerful) and their time duration (the longer the signal, the longer the interference). LMS systems already have the advantage of being allowed to transmit much more powerful transmissions. If they are allowed to offer voice services as part of their regular service offering (as opposed to the limited uses available today), they will obtain a significant "advantage" in the second parameter as well: an increase in transmission duration. The more and the longer LMS users transmit, the more they will collide and thus interfere with the Part 15 devices. Since their signals are stronger, their throughput will not be impacted, but SSI's AMR throughput will be impacted dramatically.

Finally, Progeny's proposal could lead to desensitization of SSI's receivers, a significant adverse effect that a heavy-duty-cycle system like the LMS could have on Part 15 users operating in the same band that is not even referenced in Progeny's White Paper. By rendering a receiver less sensitive, its covered range diminishes and performance degrades.⁷ Because LMS as currently contemplated by the rules is a short-packet, low-duty-cycle, messaging system, receiver desensitization is not generally a problem for other users of the same spectrum; neither the strength of the signal nor its duration is likely to "fill" other receivers and desensitize them.

Part 15 spread spectrum devices normally have protection against interference, which is usually called "process gain." A system like SSI's AMR has ~15 dB process gain. However, this gain is quickly "eaten up" by the stronger LMS transmit power, which in this specific case is at least one hundred times stronger. While Part 15 devices like SSI's AMR system can withstand decreases in process gain from the bursty operation characteristic of LMS as currently regulated, this would not be the case should Progeny's proposals be adopted and higher duty-cycle operations are permitted.

Conclusion

For the reasons set forth above, Progeny's White Paper does not sufficiently demonstrate that the adoption of its proposed rule changes would have no interference impact on Part 15 devices. To the contrary, the White Paper is devoid of realistic scenarios and does not take into account high duty-cycle operations. Accordingly, SSI remains steadfast in its strong opposition to Progeny's Petition for Rulemaking.

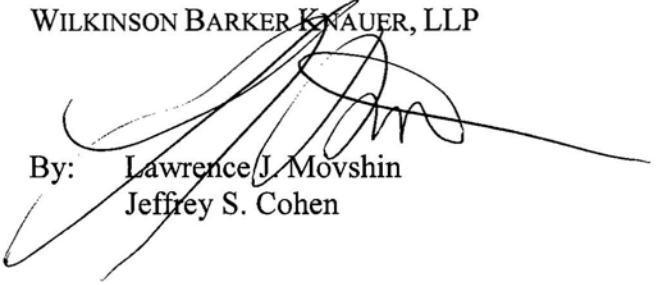
⁷ This decline in coverage could be ameliorated with a significant increase in the number of devices deployed, but such an increase would be cost-prohibitive.

Alan J. Scrim
June 12, 2003
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Should you have any questions, please contact the undersigned.

Sincerely,

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